



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

**Division of Facilities Construction and Management**

**DFCM**

# **PROGRAMMING STANDARDS**

May 25, 2005

## **PROGRAMMING STANDARDS PURPOSE**

The purpose of this standard is to set forth the requirements for facility programming services for DFCM.

Programming services shall define and provide a cost estimate for the project within the constraints of the “Agreement between DFCM and the Programming Consultant.” The finished program must communicate the needs of the Users into a workable facility description.

Avoid programming requirements that may conflict with future requirements of the Design Process or the Design Requirements.

# PROGRAMMING STANDARDS

## TABLE OF CONTENTS

Programming Standards Purpose  
Table of Contents

### **1.0 General**

#### 1.1 General

- A. Purpose and Scope

### **2.0 Facility Program**

#### 2.1 General

#### 2.2 The Completed Program Shall Include.

- A. Signature Page
- B. Executive Summary
- C. Programming procedure
- D. Space use program
- E. Detailed space use descriptions
- F. Detailed room descriptions
- G. Building systems performance criteria
- H. Cost Analysis

#### 2.3 Introductory Information

- A. Title Sheet
- B. Signature Sheet

#### 2.4 Executive Summary

- A. Purpose
- B. Organization

#### 2.5 Site analysis

- A. Purpose
- B. Physical Characteristics
- C. Orientation
- D. Site Functions and Relationships
- E. Code

#### 2.6 Building Requirements

- A. Purpose

#### 2.7 Individual Space Outlines

- A. Purpose
- B. Spaces
- C. Detached Analysis of Each Space
- D. Area Space summary Sheet

#### 2.8 Cost Model

# PROGRAMMING STANDARDS

## 1.0 GENERAL

### 1.1 General

- A. Purpose and Scope.
  - 1. Programs shall comply with the Design Process, the Design Requirements, and the Programming Standards.
  - 2. The intent of the Program Standards is to provide clear criteria which the Facility Program must achieve for the project to be considered successful.
    - a. The DFCM's Designated Representative may exclude portions of the Program Standards for projects where the scope of the programming needs are less, such as for feasibility studies.
  - 3. The specific performance requirements are given as minimum criteria to allow the Programming Consultant flexibility. If the needs of the Project are less stringent than the minimums identified in the Program Standards the approval of the DFCM's Designated Representative is required.

## 2.0 FACILITY PROGRAM

**2.1 General.** A "Program" is defined as a written statement setting forth design objectives, constraints, and criteria for a project, including space requirements and relationships, flexibility and expandability, special equipment and systems, and site requirements.

**2.2 The completed program shall include, but is not limited to the following:**

- A. Signature Page
- B. Executive Summary
  - 1. Programmatic analysis and conclusions.
  - 2. Programming references and site information.
  - 3. Programming team.
  - 4. Building programming committee.
  - 5. Area comparisons.
  - 6. Program spaces summary.

- C. Programming procedure
- D. Space use program
  - 1. Site considerations
  - 2. Site diagrams
  - 3. Efficiency analysis
  - 4. Stacking diagram
  - 5. Constructability
  - 6. General adjacency description
  - 7. General adjacency diagram
  - 8. Adjacency matrix
  - 9. Pre-schematic finish schedule
- E. Detailed space use descriptions
  - 1. Space adjacency descriptions
  - 2. Space adjacency diagrams
  - 3. Program spaces summary
- F. Detailed room descriptions
- G. Building systems performance criteria
  - 1. Code requirements
  - 2. Individual space requirements
  - 3. Structural overview
  - 4. Mechanical systems
    - a. Codes
    - b. Air handling
    - c. Controls
    - d. Fire sprinkling
    - e. Plumbing
  - 5. Site utility infrastructure
  - 6. Electrical systems
    - a. Codes
    - b. Lighting
    - c. Distribution
    - d. Fire and safety
    - e. Communications

H. Cost Analysis

1. Project estimate
2. Project schedule
3. Construction cost estimate description
  - a. Detailed estimate

**2.3 Introductory Information**

A. Title Sheet

1. Project Name
2. Name of the agency or institution
3. DFCM Project Number
4. Date of Publication
5. Name, address, and telephone number of the firm preparing program.

B. Signature Sheet

1. Appropriate signatures should include the following:
  - a. Representatives of agency persons involved in the preparation of the program.
  - b. Other persons reviewing the program as required by the agency.
  - c. Director of DFCM.
  - d. DFCM's Designated Representative.
2. Acknowledgments
  - a. Acknowledgments Statement.
  - b. List names and titles of individual who were involved in the process.
3. Index
  - a. Provide a complete index with page numbers.
  - b. Index of charts, maps and illustrations.

**2.4 Executive Summary**

- A. Purpose of the executive summary is to summarize essential information about the program for convenient reference. The summary should present the highlights and essential data of the program findings for the purpose of informing the Division of Facilities Construction and Management, the Building Board, the Governor, and the Legislature as to the most important aspects of the program.

**B. Organization**

1. **Project Justification:** Present a brief summary of functions and a statement of need as discussed in the building analysis section.
2. **Space Requirements Summary (1 or 2 pages):** Present a summary of spaces which includes both net and gross square footages with individual spaces being grouped in logical divisions. Identify which spaces are assigned usable spaces and which are auxiliary or support spaces.
3. **Cost Model: Facility Program Cost model** requires a mixture of costs per functional space (such as office, classroom, etc.), cost per cubic foot, cost per square foot, and cost per linear foot for items where the cost is not easily forecast by a cost per square foot model such as site utilities. In some cases, design options shall be selected to reduce the range of costs for the program. These design options shall be defined as assumptions. All cost information shall be summarized into a cost model with line item totals for demolition, civil/site work, structural, electrical, mechanical, landscaping, and architectural systems.
4. **Project Schedule:** The executive summary is to include a brief summary of the estimated time line of the entire project, including design, construction, and date of occupancy.

**2.5 Site Analysis**

**A. The purpose of this section is to identify the effects of the site on the program, project cost and schedule.**

1. The main questions to be answered in this section are:
  - a. What is on the site now?
  - b. How will the site affect the project?
2. The main areas of concern:
  - a. Physical characteristics.
  - b. Orientation/views/prevaling conditions.
  - c. Site functions and relationships.
  - d. Site access and preparation issues.
  - e. Codes and easement restrictions.
  - f. Geotechnical considerations and impacts.

**B. Physical Characteristics:** Collect, organize and present facts about the site which are pertinent to the development of the project. This process involves two levels of investigation:

1. Visual Survey and Investigation: This first level of fact finding is performed by the programming team and contains the following:
  - a. Visually document the site with air and land based photographs keyed to a site plan and verbal descriptions as needed.
  - b. Present features, irregularities, unique qualities.
  - c. Site description.
  - d. Neighboring buildings or features.
  - e. Utility surveys and documentation.
2. Independent Testing and Surveying: DFCM shall be responsible for testing and surveying. DFCM shall contract for environmental assessments, geologic survey, soil investigation, surface contours and property description survey, utilities surveys, title search, and archeological surveys. Programming Consultant is responsible to interpret the results and present the impact to the project. Detailed information from the following testing and surveys shall be completed and included in the Facility Program appendix.
  - a. Hazardous Materials Assessment: If contaminants are present, DFCM's Designated Representative shall arrange for the assessment and identify the costs for removal.
  - b. Geologic Survey: Identify the seismic characteristics of the site, fault lines, and the general geologic structure.
  - c. Soils Investigation: Identify the structure of the soil. Test soil for bearing capacity, collapsibility, and other characteristics. Locate the water table. Provide a topsoil mechanical/nutrient analysis. Advise concerning needs for special footings and foundations.
  - d. Surface Contours and Property Description Survey: Identify surface contours and all visible features. Locate the property line.
  - e. Utilities Surveys: This is usually done in conjunction with the surface contours and property description survey. Identify separate utility lines and related information such as size, material, depth, etc. Document the available documents for utilities. Test water pressure for fire fighting requirements.
  - f. Title Search: Determine ownership, easements, rights of way or other information associated with the project.
  - g. Archeological Surveys: Some sites shall require archeological surveys prior to design and construction. These surveys shall be completed according to the State Archeologist prior to completion of the program document.



- h. Indicate the distance to the nearest known seismic fault.
- 3. Test and survey analysis by Programming Consultant.
  - a. Utility feasibility studies to determine capacity and location for Civil Systems, Central Plant Mechanical Systems, Electrical Systems, and Communications Systems.
  - b. Review the Independent Testing and Surveying results.
  - c. Include a statement of the impact the results may have on the project and project schedule.
  - d. Analyze the cost impact of the results and include these costs in the cost model.
  - e. Prepare a list of drawings, specifications, studies, etc., which are available for the site or facility. Analyze the accuracy and deficiencies of the available documents.

C. Orientation

- 1. Present the orientation of the site:
  - a. Solar exposure
  - b. View into the site and out of the site
  - c. Climate
  - d. Prevailing winds and wind exposure

D. Site Functions and Relationships

- 1. Circulation of vehicles, pedestrians, and service needs.
  - a. Identify service to the facility including dumpster location, screened utility areas, and any special access areas needed.
- 2. Concepts of how the following types of circulation will work: Public, staff, pedestrian, student, vehicles, parking requirements, public transportation, service, ADA access, security site requirements. Use diagrams to illustrate access and circulation concepts.
  - a. Define areas of limited access.
  - b. Parking spaces required for Staff, visitors, and motor pool including any secured parking needs.

E. Code

1. Provide site consideration requirements.
  - a. How will the fire lane access requirements affect this project?
  - b. Identify by diagram access lane requirements and its effect on cost.
2. Building/occupancy types and the cost impact.
3. City and County zoning ordinances.
  - a. While local zoning approval is not required for State projects, this information is critical to enable the project to be a good neighbor to the intent of the local ordinances.
4. Fire Marshall considerations.

## **2.6 Building Requirements**

- A. The purpose of this section is to present the requirements for the following elements:
1. Identification: The purpose of this section is to identify the essential nature of this project. What is the mission of this project? What are the departments and divisions that are to be housed here? What is the major grouping of spaces? What are the major elements of this design project?
  2. Justification: The purpose of this section is to demonstrate why the project is needed at this time, at this location, and with these occupants. DFCM and the Agency shall assist in the preparation of this portion of the Facility Program document. Some areas of concern may be:
    - a. Why is the facility needed?
    - b. Why are the listed departments housed together in this facility?
    - c. What will this project contribute to the mission of the agency?
  3. History and Growth: The purpose of this section is to present this project in terms of time. The needs of the user are constantly changing. Present the following information:
    - a. History of growth of the user group.
    - b. Agency's present location and number of square feet presently used.
    - c. Anticipated growth: Document the factors leading to growth projection.
    - d. What are the needs of the user group for changeability, adaptability, flexibility, expansion?

4. Master Plan Reconciliation: If this project is required to work within the context of a campus or organization master plan, indicate ways in which the project aligns with the intent of the master plan. Indicate ways in which the project does not meet the requirements of the master plan.
5. Function: The purpose of this section is to analyze the functions to be performed in this facility. The information of the individual space requirements is essential to this section and will be used extensively. The key words are people, activities and their relationships to the project design concept.
  - a. People
    - (1) Identify the people involved in this facility. Examples: Staff, students, public patients, customers, Agency.
    - (2) Number of people.
    - (3) Categories of people in the facility.
    - (4) Present the organization of the staff in the facility.
    - (5) Present user characteristics.
    - (6) It is pertinent to consider patterns of behavior, unique needs, and special needs that will impact the facility.
  - b. Activity
    - (1) Group types of activities in appropriate and applicable categories such as: departments, service, public access, private, noisy, quiet, clean, dirty, secure, controlled, dark, etc.
  - c. Relationships: The purpose of this section is to study relationships in the project.
    - (1) Study adjacencies, and present adjacency requirements.
    - (2) Positive essential relationships.
    - (3) Negative relationships. What spaces should be kept apart or in some way separated?
    - (4) Use graphical diagrams such as bubble diagrams and stacking diagrams to define the needs of relationships.
    - (5) Evaluate the scale of individual spaces and evaluate ways they could be assembled to meet relationship needs.
    - (6) Identify zones of compatibility and shared space options.
    - (7) Identify concepts pertinent to the project, for example: Hierarchy of functions, service grouping, activity grouping, people grouping, home base, accessibility, separated flow, sequential flow, flexibility, adaptability.

6. Form: The purpose of this section is to present requirements that will influence the physical shape of the project outside of function. The question here is: “What will be the massing characteristics of the facility on the site?” Several factors are:
- a. Quality and Image: Describe the quality and durability level expected. Describe how the new building match, or contrast, with the existing materials on neighboring facilities. Communicate the goals that are appropriate to the funding and use.
  - b. Building Space Utilization Efficiency: Use this section to analyze the net-to-gross ratio. Identify and justify what ratios should be used. For our purposes net square feet means all space that is of the essence to the project. Refer to Utah Space Standards for applicable requirements. Areas not included in the net are:
    - (1) Restrooms
    - (2) Circulation
    - (3) Structure and partitions
    - (4) Columns
    - (5) Unassigned storage/maintenance areas
    - (6) Stairs
    - (7) Elevators
    - (8) Mechanical, electrical, and communication shafts and spaces.
  - c. Guidance: Programming Consultant shall recommend the net-to-gross factor most appropriate to this particular project and site.
  - d. Code Impact: Include here a Codes analysis. Before the final program is issued, review the analysis with the Building Official.
  - e. Structural Requirements: Include here an analysis of the structural requirements.
  - f. Mechanical Requirements: Include here an analysis of the mechanical requirements.
  - g. Electrical Requirements: Include here an analysis of the electrical requirements.
  - h. Communication Requirements: Include here an analysis of the communication requirements.
  - i. Energy Efficiency Requirements: Include here an analysis of the energy efficiency requirements.

- j. Hazardous Materials: Identify the project considerations related to asbestos or other hazardous materials.
- k. Existing Facilities: (If Required)
  - (1) Identify the problems related to the existing facility.
  - (2) Acquire available documentation for the facility and report any deficiencies in existing documentation.
  - (3) Present the existing facility configuration.
  - (4) Study and show ways the program requirements can work within the existing spaces.

## **2.7 Individual Space Outlines**

- A. The purpose of this section is to present the individual space requirements. The information required in this section is detailed and specific.
- B. Spaces: Consider these spaces as areas within facility with certain characteristics. Do not limit definition of spaces to rooms.
- C. Detached Analysis of Each Space:
  - 1. Function and activities performed in the space.
  - 2. Desirable space dimensions.
  - 3. Desirable sample floor plan: show critical dimensions such as required equipment clearances.
  - 4. Number of assigned occupants in the space and hours of use.
  - 5. Number of occasional visitors to the space.
  - 6. Reference to the current Utah Space Standards, if applicable.
  - 7. Type of light that is required including whether natural or artificial light and lighting levels required.
  - 8. Windows required.
  - 9. Views required.
  - 10. Acoustic requirements for privacy, noise, and intelligibility.
  - 11. Security requirements.
  - 12. Temperature, ventilation, and humidity requirements.
  - 13. Finish materials requirements.
  - 14. Electrical requirements.
  - 15. Communications outlet requirements.
  - 16. Audio-visual requirements.
  - 17. Required ceiling height.
  - 18. Furnishings and equipment requirements: Indicate whether the furnishings are new or existing to be relocated.

D. Area Space Summary Sheet.

1. Identify the Total of net and gross square feet needed.
2. Identify the net to gross factor.
  - a. Identify source of the net-to-gross factor.

**2.8 Cost Model.** The purpose of this section is to present the Preliminary Facility Program Cost Model.

A. The cost model must be summarized into the following categories:

1. Civil/Site
2. Landscape
3. Structural
4. Architectural
  - a. Building skin
  - b. Interior finish
5. Mechanical
6. Electrical
7. General Conditions
8. Overhead and profit.

B. Find and present the actual costs of two projects of similar size, use, and quality that have completed construction in the past two years as a comparison to the proposed project.